



DISCUSSION

This map sheet shows seismic-reflection profiles from surveys of the Drakes Bay and Vicinity map area, providing imagery of the subsurface geology. The seismic-reflection profiles provide the data for interpreting subsurface stratigraphy, sediment thickness, and geologic structure (see sheets 9-10 of this report).

The Drakes Bay and Vicinity map area is characterized by predominantly seaward-dipping marine sedimentary strata of the Bodega Basin (Fig. 5; see also McCulloch, 1987), a late Tertiary shelf basin that extends from San Diego to Gualala about 75 km south, and about 85 km north of the map area, respectively. Tertiary strata overlie granitic and metamorphic basement rocks of the Salinian block, all of which have been uplifted and deformed along the Point Reyes Fault and related structures, forming the present-day Point Reyes peninsula and its adjacent continental shelf.

On seismic-reflection data, the Late Cretaceous granitic rocks are nonreflective. The overlying folded Tertiary and Pleistocene strata generally are characterized by a "ribbed" seafloor morphology that results from the variable resistance to erosion of dipping beds within the sedimentary sections. These strata are characterized by continuous, parallel to subparallel, variable amplitude, high-frequency reflections (terminology from Michum and others, 1977).

Surficial and shallow sediments were deposited in the last about 21,000 years during the sea-level rise that followed the Last Glacial Maximum (LGM) and the sea major lowstand (Lambek and Chappell, 2001; Poller and Fairbanks, 2006). Sea level was about 125 m lower during the LGM, at which time the Drakes Bay and Vicinity map area was emergent. The post-LGM sea-level rise was rapid (about 9 to 11 m per thousand years) until about 7,000 years ago, when it slowed considerably to about 1 m per thousand years (Poller and Fairbanks, 2006; Stanford and others, 2011).

The sediments deposited during the post-LGM sea-level rise (the rapid transgression and highstand) are shaded blue in the high-resolution seismic-reflection profiles (Figs. 1, 2, 3, 4, 6, 8, 10); their thickness is shown on sheet 9 (Map B, D). At the base of the post-LGM unit, distinctive sediment sequences that are characterized by channeling and various progradational patterns are present (see, for example, Fig. 6), representing shoreface and (or) estuarine transgressive systems tract deposits (Cataneau, 2006).

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Seismic-Reflection Profiles, Drakes Bay and Vicinity Map Area, California

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